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10/784,869	02/24/2004	Kiichi Ueyanagi	118826	8296
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

· · · · · · · · · · · · · · · · · · ·	Application No.	Applicant(s)				
•	10/784,869	UEYANAGI ET AL.				
Office Action Summary	Examiner	Art Unit				
	Wai Lun Leung	2613				
The MAILING DATE of this communication a Period for Reply	ppears on the cover sheet w	vith the correspondence address				
A SHORTENED STATUTORY PERIOD FOR REF	DIVIS SET TO EXPIRE 3 !	MONTH(S) OR THIRTY (30) DAYS				
WHICHEVER IS LONGER, FROM THE MAILING - Extensions of time may be available under the provisions of 37 CFR after SIX (6) MONTHS from the mailing date of this communication. - If NO period for reply is specified above, the maximum statutory perions after the reply within the set or extended period for reply will, by stated that the provided period for reply will, by stated that the provided period for reply will, by stated that the provided period for reply will, by stated that the provided period for reply will, by stated particles are provided to the provided period for reply will, by stated particles are provided period for reply will, by stated particles are provided period for reply will, by stated particles are provided period for reply will, by stated particles are provided period for reply will, by stated particles are provided period for reply will, by stated particles are provided period for reply will be provided period for reply wi	DATE OF THIS COMMUN 1.136(a). In no event, however, may a od will apply and will expire SIX (6) MO tute, cause the application to become A	ICATION. I reply be timely filed INTHS from the mailing date of this communication. ABANDONED (35 U.S.C. § 133).				
Status						
1) Responsive to communication(s) filed on 06	November 2007.					
2a)⊠ This action is FINAL . 2b)□ TI	This action is FINAL . 2b) This action is non-final.					
• •	Since this application is in condition for allowance except for formal matters, prosecution as to the merits is					
closed in accordance with the practice unde	r <i>Ex par</i> te Quayle, 1935 C.	D. 11, 453 O.G. 213.				
Disposition of Claims						
4)⊠ Claim(s) <u>1-45 and 47</u> is/are pending in the application.						
4a) Of the above claim(s) is/are withdrawn from consideration.						
5) Claim(s) is/are allowed.						
6)⊠ Claim(s) <u>1-45 and 47</u> is/are rejected.						
7) Claim(s) is/are objected to.						
8) Claim(s) are subject to restriction and	I/or election requirement.					
Application Papers						
9)☐ The specification is objected to by the Exami	ner.					
10) ☐ The drawing(s) filed on is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.						
Applicant may not request that any objection to the	ne drawing(s) be held in abeya	ance. See 37 CFR 1.85(a).				
Replacement drawing sheet(s) including the corr	ection is required if the drawin	g(s) is objected to. See 37 CFR 1.121(d).				
11)☐ The oath or declaration is objected to by the	Examiner. Note the attache	ed Office Action or form PTO-152.				
Priority under 35 U.S.C. § 119	·					
12) Acknowledgment is made of a claim for forei a) All b) Some * c) None of:	gn priority under 35 U.S.C.	§ 119(a)-(d) or (f).				
1. Certified copies of the priority docume	ents have been received.					
2. Certified copies of the priority documents have been received in Application No						
3. Copies of the certified copies of the pr	riority documents have bee	n received in this National Stage				
application from the International Bure	eau (PCT Rule 17.2(a)).					
* See the attached detailed Office action for a list of the certified copies not received.						
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Attachment(s)						
1) Notice of References Cited (PTO-892)		Summary (PTO-413)				
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO/SB/08) 		(s)/Mail Date Informal Patent Application				
Paper No(s)/Mail Date	6) Other: _	·				

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DETAILED ACTION

Claim Rejections - 35 USC § 103

- 1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Furthermore, the key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR International Co. v. Teleflex Inc. note that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting In re Kahn 441 F.3d977,988,78 USPQ2d1329,1336(Fed.Cir.2006) stated that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."

2. Claims 1-6, 14-16, 23-25, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Andreu-von Euw et al.** (US007120363B2) hereafter refer to as **Euw**, in view of **Dunsky et al.** (US 20030213787A1).

Regarding to claims 1-3, **Euw** discloses a wireless optical system (fig 10) which comprises a transmitting section (552, fig 10) having a light-emitting element (560, fig 10) and a transmission light condenser lens (566, fig 10), and a receiving section (554, fig 10) having a

light-detecting element (562, fig 10) and a received light condenser lens (566, fig 10), and which communicates with a counterpart device (fig 10), the wireless optical system further comprising: scanning means which scans said light-emitting element, and scans said light-detecting element (fig 9; col 5, ln 40- col 6, ln 53); and control means (582, fig 10) which controls a transmission direction of transmission light transmitted from said light-emitting element by driving said scanning means, and controls a reception direction of received light received by said light-detecting element by driving said scanning means (col 8, ln 9-43).

Euw does not disclose expressly wherein said scanning scans said light-emitting element relative to said transmission light condenser lens, or said scans said light detecting element relative to said received light condenser lens.

Dunsky, from the same field of endeavor, teaches an optical beam projection system (*fig* 4A) which comprises a transmitting section having a light emitting element (*fig* 4A, 52) and a transmission light condenser lens (*fig* 4A, 80), and scanning means (*fig* 4A, 78) which scans said light-emitting element relative to said transmission light condenser lens using a straight line movement of the light-emitting element relative to the transmission condenser lens (*paragraph* 48), and control means (*fig* 4A, 74) which controls a transmission direction of transmission light transmitted from said light-emitting element by driving said scanning means (*paragraph* 49). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to implement **Euw's** scanning method such that it scans said light-emitting element relative to said transmission light condenser lens, and said scans said light detecting element relative to said received light condenser lens as suggested by **Dunsky**. The motivation for doing so would have been to enhance alignment accuracy.

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Furthermore, it would have been obvious for a person of ordinary skill in the art at the time of invention to recognized that applying a known technique such as that of **Dunsky's** onto **Euw's** base system upon which the claimed invention can be seen as an "improvement" would have yielded predictable results and resulted in an improvement system, since **Dunsky's** teaching is capable of enhancing performance of optical alignment accuracy.

Therefore, the rationale of applying a known technique (**Dunsky's**) to a known system (**Euw's**) ready for improvement to yield predictable results has been clearly articulated herein with the *Graham* inquiries and findings as presented above. In *Dann v. Johnston* 525 U.S. 219, 189 USPQ257 (1976) The Court held that "[t]he gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonable skilled in the art."

As to claims 32-33, **Euw** further teaches wherein said control means also controls a directional angle of the transmission light by means of driving said scanning means (col 6, ln 38-53).

As to claims 34-35, **Euw** further teaches wherein said control means also controls a directional angle of the received light by means of driving said scanning means (col 6, ln 38-53).

As to claims 4-6, **Euw** further teaches said scanning means two-dimensionally scans said light-emitting element and two-dimensionally scans said light-detecting element (col 8, ln 32-35).

As to claims 14-16, **Euw** further teaches wherein said light-detecting element is disposed in a vicinity of a focal point of said received light condenser lens, and is configured from a single

light detecting element which is equal in size to a diameter of a light-condensed spot formed by said received light condenser lens (col 9, ln 41-48).

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As to claims 23-25, **Euw** further teaches wherein said scanning means periodically wobbles a position of said single light detecting element (col 6, ln 54-62); and said control means generates a positional error signal pertaining to a transmission direction of a counterpart device by detecting a received light in synchronization with a wobbling cycle of said single light detecting element (col 6, ln 63-col 7, ln 18), and optimizes transmission and reception directions based on the positional error signal (col 7, ln 19-40).

3. Claims 26, 30, 31, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodwill** (US006775480B1) in view of **Dunsky et al.** (US 20030213787A1).

Regarding claims 26 and 45, **Goodwill** discloses an optical wireless system which communicates between a master device and a slave device, wherein said master device and said slave device respectively comprise a transmitting section having a light-emitting element and a transmission light condenser lens, and a receiving section having a light-detecting element and a received-light condenser lens (col 12, ln 10-63; fig 7), and at least one of said master device and said slave device comprises: scanning means which two-dimensionally scans said light-emitting element, and two-dimensionally scans said light-detecting element (col 3, ln 50-63); measuring means which measures a direction of a received light transmitted from said master device or said slave device (col 10, ln 41-61); and control means which drives said scanning means to control a direction of a received light transmitted from said light-emitting element and a reception

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direction of the received light received by said light-detecting element based on measurement result of said measuring means (col 10, ln 50-61).

Goodwill does not disclose expressly wherein said scanning scans said light-emitting element relative to said transmission light condenser lens, or said scans said light detecting element relative to said received light condenser lens.

Dunsky, from the same field of endeavor, teaches an optical beam projection system (*fig* 4A) which comprises a transmitting section having a light emitting element (*fig* 4A, 52) and a transmission light condenser lens (*fig* 4A, 80), and scanning means (*fig* 4A, 78) which scans said light-emitting element relative to said transmission light condenser lens using a straight line movement of the light-emitting element relative to the transmission condenser lens (*paragraph* 48), and control means (*fig* 4A, 74) which controls a transmission direction of transmission light transmitted from said light-emitting element by driving said scanning means (*paragraph* 49). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to implement **Goodwill's** scanning method such that it scans said light-emitting element relative to said transmission light condenser lens, and said scans said light detecting element relative to said received light condenser lens as suggested by **Dunsky**. The motivation for doing so would have been to enhance alignment accuracy.

Furthermore, it would have been obvious for a person of ordinary skill in the art at the time of invention to recognized that applying a known technique such as that of **Dunsky's** onto **Goodwill's** base system upon which the claimed invention can be seen as an "improvement" would have yielded predictable results and resulted in an improvement system, since **Dunsky's** teaching is capable of enhancing performance of optical alignment accuracy.

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Therefore, the rationale of applying a known technique (**Dunsky's**) to a known system (**Goodwill's**) ready for improvement to yield predictable results has been clearly articulated herein with the *Graham* inquiries and findings as presented above. In *Dann v. Johnston* 525 U.S. 219, 189 USPQ257 (1976) The Court held that "[t]he gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonable skilled in the art."

As to claim 30, **Goodwill** further teaches wherein at least one of said master device and said slave device detects a direction of the received light emitted from said master device or said slave device, and communicates by transmitting the transmission light in the direction of the received light (fig 7; col 11, ln 41-col 12, ln 63).

As to claim 31, **Goodwill** further teaches wherein said slave device two-dimensionally scans said light-emitting element, and said master device measures a direction of a received light and communicates by transmitting a transmission light in the direction *(col 11, ln 25-40)*.

4. Claims 7-9, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreu-von Euw et al. (US007120363B2) hereafter refer to as Euw, in view of Dunsky et al. (US 20030213787A1), as applied to claims 1-6 above, and further in view of Graves et al. (US006721510B2).

Regarding claims 7-9, and 36-38, the combination of **Euw and Dunksy** discloses the optical system in accordance to claims 1-6 as discussed above. **It** does not disclose expressly wherein one common condenser lens is used as both said transmission light condenser lens and said received light condenser lens, and said light-emitting element and said light-detecting

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element are disposed such that the transmission light transmitted from said light-emitting element and the received light received by said light-detecting element are transmitted and received through said common condenser lens.

Graves, from the same field of endeavor, teaches wherein one common condenser lens is used as both a transmission light condenser lens and a received light condenser lens, and said light-emitting element and said light-detecting element are disposed such that the transmission light transmitted from said light-emitting element and the received light received by said light-detecting element are transmitted and received through said common condenser lens (col 4, ln 8-16; fig 4). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use one common condenser lens as both said transmission light condenser lens and a received light condenser lens onto the combination of Euw and Dunksy's system as suggested by Graves. The motivation for doing so would have been to save space and cost (Graves, col 4, ln 13).

5. Claims 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreuvon Euw et al. (US007120363B2) hereafter refer to as Euw, in view of Dunsky et al. (US 20030213787A1) as applied to claims 1-3 above, and further in view of Javitt et al. (US006381055B1).

Regarding claims 39-42, the combination of **Euw and Dunsky** discloses the system in accordance to claims 1-3 as discussed above. **Euw** further teaches wherein said light-emitting element and light-detecting element are disposed in a vicinity of a position of a focal point of said transmission light condenser lens (col 9, ln 41-54). The combination of **Euw and Dunsky** does not disclose expressly said scanning means supports said light-emitting element and light-

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detecting element in a three-dimensionally movable manner, and said control means controls a transmission direction and a directional angle of the transmission light, by means of driving said scanning means to three-dimensionally move said light-emitting element and light-detecting element. Javitt, from the same field of endeavor, teaches a scanning means supports a light-emitting element/ light-detecting element in a three-dimensionally movable manner, and a control means to control a transmission direction and a directional angle of the transmission light, by driving said scanning means to three-dimensionally move said light-emitting element/ light-detecting element (col 10, ln 43-60). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to control the combination of Euw and Dunsky's light-emitting element and light-detecting element in a three-dimensionally movable manner as suggested by Javitt, and having a control means such as that of Javitt's to control a transmission direction and a directional angle of the transmission light, by driving said scanning means to three-dimensionally move said light-emitting element and light-detecting element. The motivation for doing so would have been to provide a more accurate alignment.

6. Claims 10, 11, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreu-von Euw et al. (US007120363B2) hereafter refer to as Euw, in view of Dunsky et al. (US 20030213787A1), as applied to claims 2, 3, 5, and 6 above, and further in view of Goodwill (US006775480B1).

Regarding claims 10, 11, 43, and 44, the combination of **Euw and Dunksy** discloses the optical system in accordance to claims 2, 3, 5, and 6 as discussed above. **It** does not disclose expressly wherein said light-detecting element includes a plurality of light-detecting cells

arranged in a two-dimensional array, and said control means drives said scanning means to limit said light-detecting cells to four or less number of cells which receive light among the plurality of light-detecting cells. **Goodwill**, from the same field of endeavor, teaches wherein said light-detecting element includes a plurality of light-detecting cells arranged in a two-dimensional array, and said control means drives said scanning means to limit said light-detecting cells to four or less number of cells which receive light among the plurality of light-detecting cells (col 3, ln 51-63). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to arrange a plurality of light-detecting cells in a two-dimensional array onto the combination of **Euw and Dunsky**'s system as suggested by **Goodwill**. The motivation for doing so would have been to be able to sufficiently accommodate the number of data channels being transmitted (Goodwill, col 4, ln 47-56).

As to claim 12, **Euw** further teaches wherein the plurality of light-detecting cells are configured from a plurality of CCDs or MOS elements (col 7, ln 46-48).

As to claim 13, **Euw** further teaches wherein the plurality of light-detecting cells are configured from a plurality of photodiodes or avalanche photodiodes (col 7, ln 46-48).

Claims 17-19 are rejected for the same reasons as stated above regarding claims 10, 11, 43, and 44, because in addition to the limitations as stated above, **Euw further** teaches wherein said light-detecting element is disposed in a vicinity of a focal point of said received light condenser lens, and is constituted from light detecting elements which are equal in size to a diameter of a light-condensed spot formed by said received light condenser lens (col 9, ln 41-54). It would have been obvious to combine **Euw, Dunsky,** and **Goodwill** for the same reason as

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stated regarding claims 10, 11, 43, and 44, such that said light-detecting element is constituted from a pair of light detecting elements as suggested by **Goodwill**.

7. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreuvon Euw et al. (US007120363B2) hereafter refer to as Euw, in view of Dunsky et al. (US 20030213787A1), as applied to claims 1-6 above, and further in view of Mun (US005663944A).

Regarding claims 20-22, the combination of **Euw and Dunsky** discloses the optical system in accordance to claims 1-6 as stated above. **It** does not disclose expressly wherein said light-emitting element is formed over said light-detecting element. **Mun**, from the same field of endeavor, teaches a light-emitting element is formed over a light-detecting element (*fig 4, col 3, ln 24-50*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to form a light-emitting element stacked on a light-detecting element onto the combination of **Euw and Dunsky**'s system as suggested by **Mun**. The motivation for doing so would have been to reduce space and cost.

8. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodwill** (US006775480B1), in view of **Dunsky et al.** (US 20030213787A1), as applied to claim 45 above, and further in view of **Andreu-von Euw et al.** (US007120363B2) hereafter refer to as **Euw**.

Regarding claim 47, the combination of **Goodwill and Dunsky** teaches the optical wireless system which communicates between a master device and a slave device as discussed above regarding claim 45, it does not disclose expressly wherein said transmitting section of at least one of said master device and said slave device transmits transmission light having a first

directional angle, and said receiving section of the at least one of said master device and said slave device receives the transmission light having the first directional angle, and starts a communication with said transmitting section, and wherein, subsequently, said transmitting section or said receiving section performs the communication using a narrower directional angle of the transmission light or the received light than the first directional angle. Euw, from the same field of endeavor, teaches an optical wireless system wherein a transmitting section of a transmission device transmits transmission light having a wide directional angle (col 6, ln 38-44), and said receiving section of a remaining device receives the transmission light having a wide directional angle, and starts a communication with said transmitting section, and wherein, subsequently, said transmitting section or said receiving section performs the communication by means of narrowing a directional angle of the transmission light or the received light (col 6, ln 43-53). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to utilize a wide directional angle and a narrow directional angle onto the combination of Goodwill and Dunsky's system based on different circumstances as suggested by Euw. The motivation for doing so would have been to appropriately allocate power consumption while maintaining alignment accuracy.

9. Claims 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goodwill** (US006775480B1), in view of **Dunsky et al.** (US 20030213787A1), as applied to claim 26 above, and further in view of **Javitt et al.** (US006381055B1).

Regarding claim 27, the combination of Goodwill and Dunsky discloses the system in accordance to claim 26 as discussed above. It does not disclose expressly wherein said light-emitting element of said master device and said slave device emit the transmission light at

different wavelengths. **Javitt**, from the same field of endeavor, teaches a wireless optical system having light-emitting element of said master device and said slave device emit the transmission light at different wavelengths (col 8, ln 11-29). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use different wavelengths for emitting elements for the master device and slave device onto the combination of **Goodwill and Dunsky**'s system as suggested by **Javitt**. The motivation for doing so would have been to avoid interference.

As to claims 28 and 29, **Javitt** further teaches wherein the wavelength of the beam is preferably between 0.7 μm and 1.5 μm. Therefore, absent any teaching of criticality, it would have been an engineering design choice to implement a shorter wavelength for the slave device then that of the transmission light emitted from said light-emitting element of said master device; or wherein said light-emitting element of said master device emits the transmission light having a wavelength of 1.4 to 1.6 μm, and said light-emitting element of said slave device emits the transmission light having a wavelength of 0.8 to 1 μm. The motivation would have been to optimize transmission quality using different design choice criteria. Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

Response to Arguments

10. Applicant's arguments with respect to claims 1-45, and 47 have been considered but are most in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 11:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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DWL January 3, 2008

JASON CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600